

## **THE CLAIMS**

What is claimed is:

- 5                   1.       An arthroplasty prosthesis, comprising:  
                    first and second bone contacting members configured for engaging opposing  
articulated bones; and  
                    an articulation member supportively associated with the first and second  
contacting members to allow relative pivotal and translational movement therebetween over  
10   anterior-posterior and lateral pivotal axes, and anterior-posterior and lateral translational axes,  
to allow the opposing bones to pivot and translate with respect to each other, wherein the  
articulation member is configured to permit the translational movement substantially  
uncoupled from the pivotal movement.
- 15                   2.       The prosthesis of claim 1, wherein the articulation member is  
configured for limiting the translational movement along both translational axes to a  
predetermined range.
- 20                   3.       The prosthesis of claim 2, wherein the articulation member is  
configured for limiting the pivotal movement along both pivotal axes to a predetermined  
range.
- 25                   4.       The prosthesis of claim 1, wherein at least one of the translational axes  
extends substantially through at least one of the pivotal axes.
5.       The prosthesis of claim 4, wherein both translational axes extend  
substantially through both pivotal axes.

6. The prosthesis of claim 1, wherein the articulation member comprises first and second portions that are translatable with respect to each other to provide the relative translational motion along at least one of the translational axes.

5 7. The prosthesis of claim 6, wherein the first contacting member is pivotably mounted to the first articulation portion.

8. The prosthesis of claim 6, wherein the second contacting member is pivotably mounted to the second articulation portion.

10 9. The prosthesis of claim 1, wherein the first contacting member has a first pivotal axes about the articulation member, and the second contacting member has a second pivotal axes about the articulation member, with the articulation member being configured for translating the first and second pivotal axes with respect to each other.

15 10. The prosthesis of claim 1, wherein the articulation member is configured to permit relative axial rotation between the contacting members.

20 11. The prosthesis of claim 1, further comprising a body prosthetic portion disposed between the contacting members, wherein the articulation member comprises first and second articulation portions articulably associating the body prosthetic portion with each of the first and second contacting members, respectively, the prosthesis having an axial height corresponding to the height of a vertebra and two adjacent disks for engaging the opposing vertebrae which are non-sequential with each other.

25 12. A arthroplasty prosthesis, comprising:  
first and second bone contacting members configured for engaging opposing articulated bones; and

30 an articulation member comprising first and second articulation portions that are movably associated with each other, the first articulation portion being pivotally

associated with the first contacting member, and the second articulation portion being pivotally associated with the second contacting member.

13. The prosthesis of claim 12, wherein one of the first articulation portion  
5 and first contacting member defines a protrusion, and the other defines a recess configured for receiving the protrusion to pivotally associate the first articulation portion and first contacting member.

14. The prosthesis of claim 13, wherein one of the second articulation  
10 position and second contacting member defines a protrusion, and the other defines a recess configured for receiving the protrusion to pivotally associate the second articulation portion and second contacting member.

15. The prosthesis of claim 13, wherein at least one of the recess and  
15 protrusion is tapered substantially about a spinal axes that extends axially between the connecting members.

16. The prosthesis of claim 12, wherein the articulation portions comprise  
blocking members juxtaposed radially with respect to a spinal axes that extends axially  
20 between the contacting members for abutting each other to limit the translational movement therebetween.

17. The prosthesis of claim 16, wherein the blocking members comprise:  
a key extending from one of the articulation portions; and  
25 a keyway defined in the other articulation portion in which the key is received for translational movement, the keyway having an edge wall disposed to block the translational movement of the key.

18. The prosthesis of claim 17, wherein the edge wall and key are annular.

19. The prosthesis of claim 17, wherein the edge wall comprises two edge walls disposed on opposite sides of the keyway such that the key and edge wall concurrently contact at at least two locations to block the translational movement of the key within the keyway.

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20. The prosthesis of claim 17, wherein the key and keyway have a dovetail configuration for axially retaining the key in the keyway at a limit of the translational movement.

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21. The prosthesis of claim 11, wherein the first and second articulation portions are ring shaped with a hollow center.

22. The prosthesis of claim 21, further comprising a retaining member associated with the contacting members and extending through the hollow center of the articulation portions to retain the articulation portions in the association with the contacting members.

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23. The prosthesis of claim 22, wherein the retaining member comprises a suture.

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24. The prosthesis of claim 21, wherein at least one of the vertebra contacting members comprises a post extending into the hollow center of at least one of the articulation portions for retaining the at least one articulation portion in said association with the contacting member associated therewith.

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25. The prosthesis of claim 12, further comprising a body prosthetic portion discussed between the articulation portions, such that the contacting members are pivotally and translationally moveable with respect thereto.

26. A spinal prosthesis, comprising first and second bone contacting members configured for engaging opposing first and second bones of the axial skeleton, respectively, the first contacting member comprising:

a fastener mount portion configured for attaching a bone fastener thereto; and  
vertebral contacting surfaces disposed and oriented for positioning a first vertebra body apophyseal ring of the first bone with respect to the fastener mount portion in an attachment position for attaching the fastener from the fastener mount portion through the apophyseal ring to attach the first contacting member to the first bone.

27. The prosthesis of claim 26, wherein the second contacting member comprises:

a fastener mount portion configured for attaching a bone fastener thereto; and  
vertebral contacting surfaces disposed and oriented for positioning a second vertebra body apophyseal ring of the second bone with respect to the fastener mount portion in an attachment position for attaching the fastener from the fastener mount portion through the apophyseal ring to attach the first contacting member to the second bone.

28. The prosthesis of claim 26, wherein the fastener mount portion defines an opening for receiving a threaded surgical fastener therethrough.

29. The prosthesis of claim 28, wherein the fastener mount portion is oriented for inserting the fastener diagonally into the apophyseal ring.

30. The prosthesis of claim 26, wherein the fastener mount portion comprises a plurality of fastener mount portions for inserting a plurality of fasteners through the apophyseal ring.

31. The prosthesis of claim 26, wherein the vertebral contacting surfaces are oriented to capture axial and radial surfaces of the vertebral body for positioning the apophyseal ring in the attachment position.

32. The prosthesis of claim 31, wherein:

the vertebral contacting surfaces comprise an axial contacting surfaces  
comprise an axial contacting surface oriented to abut and support an axial face of the first  
5 vertebra body, and a radial contacting surface configured to abut a radial side of the first  
vertebra body;

an apophysis groove is defined between the axial and radial contacting surfaces  
to receive the apophyseal ring; and

10 the fastener mount portion is configured for directing the fastener into the  
apophysis groove.

33. The prosthesis of claim 26, further comprising an articulation that  
articulably associates the first and second contacting members to allow the first and second  
vertebrae to articulate with respect to each other.

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34. An intervertebral prosthesis, comprising a contacting member that  
comprises:

an axial contacting surface oriented to abut and support an axial face of the  
first vertebra body;

20 a radial contacting surface configured to abut a radial side of the first vertebra  
body; and

an apophysis receiving area between the axial and radial contacting surfaces  
defining an apophysis groove that is disposed and configured for receiving the apophyseal  
ring of the vertebra body.

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35. The prosthesis of claim 34, wherein the contacting member comprises  
first and second bone contacting members disposed for engaging opposing bone of the axial  
skeleton with the axial and radial contacting surface, and the prosthesis further comprises an  
articulation member that articulably associates the first and second contacting members to  
30 allow the first and second bones to articulate with respect to each other.

36. An arthroplasty spinal prosthesis, comprising:  
first and second bone contacting members configured for engaging opposing  
bones of the axial skeleton; and

5 an articulation member supportively associated with the first and second  
contacting members to articulably associate the contacting members for permitting the  
vertebrae to articulate;

wherein at least one of the contacting members and articulation member is  
made of a radiolucent material.

10 37. The prosthesis of claim 36, wherein the contacting members comprise  
radiopaque marks visible in an MRI, CT scan, or x-ray.

15 38. The prosthesis of claim 36, wherein each of the contacting members is  
substantially radiolucent.

39. An arthroplasty prosthesis, comprising:  
first and second bone contacting members configured for engaging opposing  
articulated bones, each of the defining at least one suture opening for receiving a suture; and  
20 an articulation member supportively associated with the first and second  
contacting members to articulably associate the contacting members for permitting the bones  
to articulate; and

a suture extending through the suture openings to retain the contacting  
members and articulation member in an assembled state.

25 40. An arthroplasty prosthesis for implantation in an implantation site  
between two non-adjacent bones of the axial skeleton, comprising:  
a vertebral body prosthetic portion configured for replacing at least vertebral  
body of a patient; and

upper and lower disk prosthetic portions, configured to replace at least portions of two intervertebral disks disposed adjacent the replaced portion of the vertebral body, the disk prosthetic portions configured to contact and support axial skeleton bones adjacent the implantation sight and being articulated with the body prosthetic portion;

5 wherein the body and disk prosthetic portions are associated for cooperatively carrying spinal loads at the implantation site.

41. An arthroplasty spinal prosthesis for implantation in an implantation site, comprising:

10 first and second bone contacting members configured for engaging opposing bones of the axial skeleton, at least one of the contacting members having and being configured to deliver an antibiotic, protein, or biologically active substance to the implantation site; and

15 an articulation member supportively associated with the first and second contacting members to articulably associate the contacting members for permitting the bones to articulate.

42. A prosthesis insertion device for implanting a spinal prosthesis, comprising:

20 first and second holding portions having a holding position in which the holding portions are configured for cooperatively and positively holding the prosthesis; and

a connecting member associated with the holding portions for selectively maintaining the holding portions in the holding position and for releasing the holding portions therefrom;

25 wherein the holding portions are configured to cooperatively capture the prosthesis in the holding position sufficiently to prevent removal thereof from the holding portions and to maintain a predetermined orientation between articulated portions of the prosthesis, the holding portions being configured for releasing the prosthesis when released from the holding position.



43. The insertion device of claim 42, wherein the connecting member comprises a hinge that pivotally connects the holding portions.

5 44. The insertion device of claim 43, wherein the connecting member comprises a scissor linkage with handles that are hinged at the hinge for moving the holding portions into and from the holding position.

10 45. The insertion device of claim 44, wherein each holding portion defines a groove which in the holding position aligns with the groove of the other holding portion to define a guide bores for guiding a drill or fastener to a predetermined position with respect to the prosthesis.